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GKNG 1259 PCT

AXIAL SETTING DEVICE WITH DISC SPRING TRANSMISSION

Technical Field

[0001] The invention relates to a coupling assembly having an axial setting device in the form of a ball ramp assembly with an axially supported supporting disc and an axially displaceable pressure disc which, in their end faces facing one another, are provided with ball grooves whose depth is circumferentially variable in opposite directions, wherein balls via which the supporting disc and the pressure disc axially support one another run in pairs of ball grooves and wherein the supporting disc and the pressure disc are rotatable relative to one another by being driven by a motor.

Background

[0002] Coupling assemblies of this type are widely used in the drivelines of motor vehicles in the form of locking couplings for differential drives or in the form of so-called hang-on couplings for optionally driving an additional driving axle. However, their field of application is not limited to said ranges of use. As a rule, the electromotive drive of at least one of the discs rotatable relative to one another, i.e. the supporting disc and the pressure disc, is effected via a spur gear reduction stage, with a transmission ratio of 1:50 being typical. This results in high axial loads on the axial bearings used for the support of, or pressure transmission to, the two discs. There are generated extremely high pressure loads on the few supporting balls in the pairs of ball grooves.

Summary Of The Invention

[0003] It is an object of the present invention to reduce the above-described high loads on the ball ramp assembly without having to accept a reduction in the axial setting forces at the coupling assembly. The objective is achieved in that the pressure disc of

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